

# FLORIDA HIGHWAYS

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Project 40-A. Looking North near Micco. Surface-Treated Base Complete.

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Vol. 3

APRIL, 1926

No. 4

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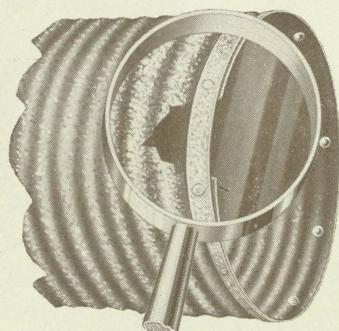
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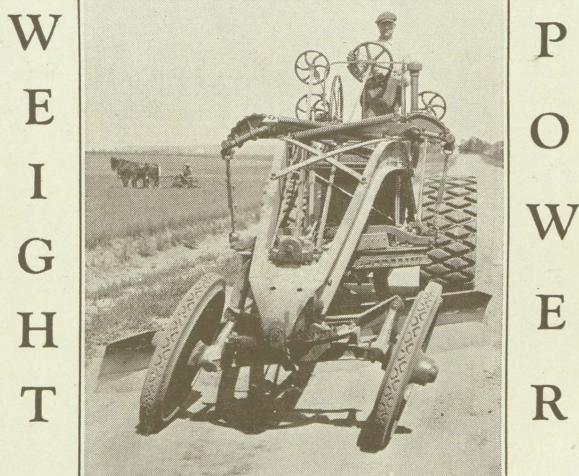
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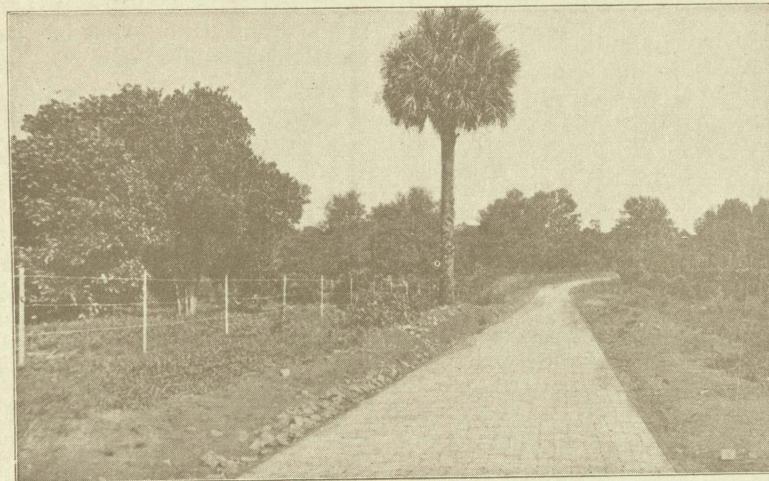


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# FLORIDA HIGHWAYS



Vol. III

APRIL, 1926

No. 4

## Transactions at the Quarterly Meeting of the State Road Department, Tallahassee, Florida, April 2, 1926

THE regular quarterly meeting of the State Road Department of the State of Florida was held at the offices of the Department in Tallahassee on Friday, April 2nd, 1926. The following members were present: Dr. F. A. Hathaway, Chairman; E. P. Green, W. J. Hillman, Harvey Bayliss and I. E. Schilling. J. L. Cresap, State Highway Engineer, and B. A. Meginniss, Attorney for the Department, were also in attendance, the latter acting as Secretary.

Minutes of the meetings of the Department held August 10th, 1925; October 28th, 1925; January 27th, 1926, and March 10th, 1926, were read and corrected. On motion of Mr. Green, seconded by Mr. Bayliss, said minutes were approved as corrected.

### Power Transmission Lines on State Highways

Frank H. Owen, of Jacksonville, Commissioner of Public Utilities for said city; G. C. Estill, of Miami, and Joe H. Gill, of Miami, representing Florida Power and Light Company, and F. M. Craft, of Atlanta, representing Southern Bell Telephone and Telegraph Company, appeared before the Department with further reference to the matter of the advisability and expediency of the Department's

granting to power companies permits to use the rights of way of State roads for power transmission and service lines. These gentlemen declared that the wire users represented here were in practical accord and that no friction was anticipated.

Upon motion of Mr. Green, seconded by Mr. Schilling, the following resolution was unanimously adopted:

Be it Resolved, That the Department does hereby confirm and reaffirm its resolution adopted at the January, 1925, meeting of the Department, on the subject of power lines on State Highways, which said resolution is as follows, to-wit:

“Resolved, That the Chairman is hereby authorized to grant to electric light and power companies, serving the public, permission to locate their lines along the public highways under such regulations and agreement as he deems practicable.”

### State Road No. 28

Hon. E. S. Matthews, of Starke, President of the Association to Promote the Construction of State Road No. 28, appeared before the Department to discuss said road, requesting that the Department bear it in mind and thanking the members for the interest

evinced in the same. Mr. Matthews declared that the counties through which the road is projected are proceeding to authorize bond issues to make available county funds to be used in the construction of the road.

#### **Jefferson County**

Hon. Parkhill Mays, Chairman of the Board of County Commissioners of Jefferson County, appeared and requested information as to the status of the road programme in Jefferson County. Mr. Mays was furnished with the information requested.

At this juncture the Department recessed until two o'clock P. M. for lunch.

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#### AFTERNOON SESSION 2 O'CLOCK

Present as at morning session.

#### **Sarasota County—Road 5—Location**

Mr. Green presented to the Department a resolution by the Board of County Commissioners of Sarasota County requesting that the Department comply with the request of the Brotherhood of Locomotive Engineers with reference to the location of State

Road No. 5 through the property of said Brotherhood at Venice in said county.

Upon motion of Mr. Green, seconded by Mr. Schilling, the following resolution was adopted:

Resolved: That the resolution of the Board of County Commissioners be filed and that the same be given due consideration by the Department when the location of State Road No. 5, in Sarasota County, is made.

#### **Dixie County—Road 19**

On motion of Captain Hillman, seconded by Mr. Bayliss, the following resolution was adopted:

Whereas, the County Commissioners of Dixie County, Florida, have adopted and forwarded to the State Road Department the following resolution:

"Whereas, this Board will have available the proceeds of a sale of \$100,000.00 time warrants, which said warrants have been duly authorized by the Legislature of the State of Florida, to apply to the construction of State Road No. 19, through said county, and

"Whereas, a proposal has been made that this County co-operate with the State Road Department of the State of Florida, in the construction of said road, to the end that with the combined resources of said Department and this County available for said



Project 39-A. Sebastian River Bridge from East or Indian River Side.

purposes, a standard type road may be constructed, and

"Whereas, this Board is favorable to the proposal as hereinafter outlined; now therefore, be it

"Resolved, By the Board of County Commissioners of Dixie County, Florida, that this Board does agree to and with the State Road Department of the State of Florida, as follows, to-wit:

"1. That the Board will turn over to the said State Road Department the proceeds of the sale of the said \$100,000.00 of time warrants to be used in constructing a surface-treated rock base on said State Road No. 19, between Steinhatchee River and Cross City.

"2. That in consideration of the use of the said proceeds of said sale of \$100,000.00 time warrants by the said Department for this purpose that the County of Dixie does agree to and with said Department that it will use its convict forces and its funds derived from the gasoline tax for the purpose of completing according to the specifications of said State Road Department, the grade of said road between the Steinhatchee River and Cross City, and upon the completion of said grade in accordance with the specifications of said State Road Department, will continue to use said gasoline funds and its force of convicts to construct a grade according to plans and specifications and on location of said State Road Department from Cross City to Old

Town, where it will connect with a grade already prepared.

"3. That said agreement is based upon the use by the said State Road Department of the said funds and a force of its convicts to lay a surface-treated rock base on said State Road No. 19, between Steinhatchee River and Cross City.

"4. That in the event that the County shall at any time before said grades are completed according to specifications of said Department, discontinue the use of its gasoline funds and its convicts for the purposes hereinabove mentioned, that said State Road Department shall have a right to withdraw its forces from said County, and all obligations by said Department hereunder shall thereupon cease and determine.

"5. It is understood that upon the completion of said surface-treated rock base as hereinabove outlined, the Department will enter into negotiations with the County looking to the surface treating of the remainder of said road in said County.

"6. That a certified copy of this resolution be mailed to the State Road Department, and that the covenants and agreements herein contained shall be binding upon notification by the Department that it accepts the provisions hereof."

And Whereas, this Department favors the proposal in said resolution contained, and on the conditions therein stated,

(Continued on Page 6)



Looking North Between Grant and Micco. Base with Surface Treatment Not Completed.



# Florida Highways

Published Monthly  
Official Publication of the State Road Department

## PERSONNEL OF DEPARTMENT

F. A. HATHAWAY (*Jacksonville*), *Chairman*  
(*Official Residence, Tallahassee.*)  
E. P. GREEN, *Bradenton*  
W. J. HILLMAN, *Live Oak*  
J. HARVEY BAYLISS, *Pensacola*  
I. E. SCHILLING, *Miami*  
WALTER P. BEVIS, *Tallahassee, Acting Secretary.*

## PERSONNEL OF EMPLOYEES IN GENERAL CHARGE OF THE WORK OF THE DEPARTMENT

### Engineering Division

|                                    |                               |
|------------------------------------|-------------------------------|
| J. L. Cresap, Tallahassee.....     | State Highway Engineer        |
| L. K. Cannon, Tallahassee....      | Ass't. State Highway Engineer |
| G. L. Derrick, Tallahassee.....    | Bridge Engineer               |
| C. W. DeGinther, Tallahassee.....  | Ass't. Bridge Engineer        |
| Harvey A. Hall, Gainesville.....   | Testing Engineer              |
| F. W. Berry, Jr., Tallahassee..... | Office Engineer               |
| Harvey A. Hall, Gainesville.....   | Acting Supt. of Equipment     |
| R. L. Bannerman, Marianna.....     | Div. Engr.—1st Div.           |
| J. H. Dowling, Lake City.....      | Div. Engr.—2nd Div.           |
| R. J. Cassie, Fort Pierce.....     | Div. Engr.—3rd Div.           |
| L. B. Thrasher, Ocala.....         | Div. Engr.—4th Div.           |
| A. W. Kinney, Lakeland.....        | Div. Engr.—5th Div.           |
| R. C. Fergus, Fort Lauderdale..... | Div. Engr.—6th Div.           |

### Accounting Division

|                                 |            |
|---------------------------------|------------|
| S. L. Walters, Tallahassee..... | Accountant |
|---------------------------------|------------|

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B. A. Meginniss, Attorney for the Department,  
Editor and Business Manager



## THE TAMiami TRAIL

For a number of months, the matter of the definite location of State Road No. 27, popularly known as the Tamiami Trail, has been a matter of great concern to the members of the Department. These gentlemen have recognized that it presented a difficult problem, and they approached its solution fully aware of its momentous nature.

On April 19th, a conference was held by the chairman of the Department with the chairmen of the Boards of County Commissioners of Dade, Collier and Monroe counties, with the chairman of the Board of Lee county also in attendance and participating, and as a result of this conference a proposal was made by the Department's head which it is believed offers a happy solution of the matter and properly serves the interest of all the counties as well as the larger interest of the entire State. To recount this proposal in detail would serve no useful purpose since it is clearly set out in the letter which the chairman addressed to the members of the Department and which appears in full on the opposite page, under the head "Chairman's Column."

A careful study of this letter is invited. It is believed that it offers a splendid solution and one which each county participating may well approve. At the time of this writing, the attorney for the Department is preparing a draft of an agreement to carry into effect the proposals made, and this will be formally submitted to the County Commissioners of each county participating in the conference, as well as to the members of the Department. Not only does this arrangement take care of the proper location of the road, but it adequately and properly cares for the interests of the counties through which or contiguous to which the road runs.

The statement that it will take three and a half years to complete this road is the first statement from the Department as to the probable length of time required for its completion. Many and wild have been the statements on this feature of the situation. Some enthusiasts have even declared that travel might be turned over the Trail in three months, or varying longer intervals, if such and such route were adopted. In fact, this sort of propaganda, as the chairman terms it, has hampered the members in their efforts to properly deal with the question. The Department recognizes the construction of this road is a gigantic task. This task it is undertaking, and it will insist that the job be done right. It will not be party to any farce, and in order that no one may be misled through enthusiasm or other cause to expect a sooner completion, the chairman has stated his belief as to the time that will be required, "because," said the chairman, "the public should know the truth."

## Chairman's Column

### LOCATION OF STATE ROAD NO. 27

THE Editor does not feel that he is taking a liberty in using in this issue, the space allotted to the Chairman, for the reason that the letter which appears below was in fact written by the Chairman and by him addressed to the members of the Department. This letter followed a conference which was held in Tallahassee April 19th between chairman Hathaway and the Chairmen of the Boards of County Commissioners of Collier, Dade and Monroe Counties, the Chairman of the Board of Lee County being also present and participating. This conference was held in pursuance of a resolution adopted by the Department at its quarterly meeting, under the terms of which the Chairman of the Department was authorized to confer with these officials with a view to working out a satisfactory solution of the problem of the location of State Road No. 27, popularly known as the Tamiami Trail.

The conference lasted throughout the entire day, the Chairman stating plainly his views on the subject after painstaking investigation, numerous visits to the proposed routes of the road, and careful consideration. Opportunity for expression was given to each official present, and due consideration given to every suggestion advanced. At the conclusion of the conference, the Chairman summarized its results in the following letter which was immediately addressed to each member of the Department:

#### Hathaway's Letter

"Conference with chairmen of boards of county commissioners of Collier, Dade and Monroe counties on location of Tamiami trail, authorized by resolution adopted at the quarterly meeting April 2, was held today with Mr. J. E. Morris, chairman of board of county commissioners of Lee county, present and participating, with the following results:

"The chairman stated to these gentlemen at the outset that, if he interpreted correctly the views of the members of the State Road Department, the Jenkins survey, with such slight deviations as might be deemed advisable, would be looked upon with favor by this organization as the best location for this road No. 27. I also made it plain, however, that the department was not unmindful of the interest of Monroe county in this important road and stood ready, therefore, to consider a proposal from Collier county to give Monroe an outlet to the West.

#### Proposes Solution

"Having made these statements, I proceeded to outline what to me seemed the best solution to this whole problem, namely; that Collier county build a road of standard grade, meeting the specifications of the State Road Department, from Road 27 due south to the Monroe county line, touching this line at the intersection of the road now being built by Monroe county and the Chevelier Corporation northwest to this line; that Monroe county use the funds, which the commissioners of the county proposed to turn over to the State Road Department in the first instance, to build a standard road, also meeting the requirements and specifications of the State Road Department,

from the Dade county line to the Collier county line; that the State Road Department would, when this second road shall have been completed, take same over for maintenance as a state highway.

"The chairman of the Department stated to the chairman of the board of county commissioners of Collier county that in lieu of the construction of the four miles of road connecting the Tamiami trail with the Monroe county line, this department would credit that county with four miles from where the dredge is at present working to the Dade county line; further, that the department, to complete this second road and give Monroe county an outlet to the East would construct its standard road from the point of intersection of the trail in Dade county to the Monroe county line. The department, of course, has made its decision to construct all the road in Dade county and is at present working at the task.

"If this agreement is acquiesced in by the counties interested, the state will have two roads through a portion of this section of equal grade and the interests of each county will be properly served.

"The agreement embodying these problems will be prepared by the department's attorney within the next few days and will be forwarded to the chairmen of boards of county commissioners of the three counties and to the members of the State Road Department for approval. In the meantime, believing that the state has gone as far to accommodate all interests concerned as possible consistent with the best interests of the whole state, I think that a vote should be taken on the definite location of Road No. 27 and will suggest that, if you approve the proposals which have been made by the chairman in the resolution which was adopted, and favor the Jenkins survey with such slight deviations as may seem advisable, you wire your vote. If you do not favor this location, please wire any suggestion that you may have with reference to the matter.

#### Favors Jenkins' Survey

"The chairman's vote will be for the Jenkins survey because it is the shorter, the more direct and the most feasible."

It is understood that all the proposals which the chairman made at the conference are subject to discussion by the members of the department and will require its approval before they can be put into effect.

In further commenting on the result of today's conference, Dr. Hathaway said: "From personal observation and from the investigations which have been made by the engineers, it was found that there will be no difference in the time required to complete the trail as between the two routes proposed. The key to the whole situation is the portion lying in Dade county, which the department has undertaken to construct.

"In any event it will take three and a half years to complete this trail if all conditions are favorable. It is meant by this to complete a standard and travelable road connecting the two counties."

He further stated that it was unfortunate that so

**TRANSACTIONS AT QUARTERLY MEETING OF  
STATE ROAD DEPARTMENT**

(Continued from Page 3)

Now, therefore, be it resolved by the State Road Department that the proposal of Dixie County, Florida, as contained in the foregoing resolution, and subject to the covenants, agreements and stipulations therein contained, be and the same is hereby accepted and approved.

Be it further resolved, That said County Commissioners of Dixie County be furnished a certified copy of this resolution as notification that it accepts the same; and

Be it further resolved, That the County Commissioners be and they are hereby requested to issue and deliver to this Department for sale One Hundred Thousand (\$100,000.00) Dollars of time warrants in accordance with the provisions of Chapter 10479 (457) Special Acts of 1925, to carry out the purposes of this resolution.

**Escambia County—Road 7—Project 51**

Upon motion of Mr. Bayliss, seconded by Mr. Green, the following resolution was unanimously adopted:

Whereas, this Department has surveyed and located State Road No. 7 in Escambia, as is shown by plat of said location on file in its offices, and on file in the office of the Clerk of the Circuit Court of Escambia County, and

Whereas, said Department has found and determined, and does hereby find and determine, that it is necessary, wise and expedient to secure by condemnation, the real estate hereinafter described, for the purpose of a right of way for said State Road No. 7; now, therefore, be it

Resolved, That the County Commissioners of Escambia County be and they are hereby authorized and requested to secure by condemnation for the Department, for the purpose of a right of way for said State Road 7, the following described real estate, to-wit:

A strip of land sufficient to widen the existing Pensacola-Flomaton Public Road right of way to a width of thirty-three feet (33') on each side of the center line, which center line is described as follows:

Beginning at Station 1252 plus 35 of the County Engineer's 1925 survey of the Pensacola-Flomaton Road, this being the intersection of the center-line of said road survey with the south line of the NW $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 28, Township 3 North, Range 31 West, run thence around a two-degree (2°) curve to the right in a Northeasterly direction, eight hundred and twelve and seven-tenths (812.7) feet to a point of tangency; thence in a straight line tangent to said curve, North, twenty degrees, four minutes East (N. 20° 4'), East five hundred fifty-five and five-tenths (555.5) feet to an intersection with the North line of said NW $\frac{1}{4}$  of NE $\frac{1}{4}$  of Section 28, Township 3 North, Range 31 West; containing in all 1 and 15/100 acres of land in addition to the original County right of way and all lying in the NW $\frac{1}{4}$  of NE $\frac{1}{4}$ , Section 28, Township 3 North, Range 31 West, in Escambia County, Florida.

Be it further resolved, That said County Commissioners be and they are hereby authorized through their counsel to prepare and sign all necessary pleadings and affidavits, and take all steps necessary and required by the laws of Florida in condemnation proceedings for State Road purposes, and that they be and they are hereby authorized to use the name of this Department in any condemnation proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law;

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their counsel be and he is hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith, and to prosecute such action to completion.

**Martin County—Road 4**

Upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Whereas, the Department has surveyed and located State Road No. 4, in Martin County, as is shown by a plat of said location on file in its offices, and on file in the office of the Clerk of the Circuit Court for said Martin County, and

Whereas, said Department has found and determined, and does hereby find and determine that it is necessary, wise and expedient to secure, by purchase or condemnation, sufficient lands as will make a width of 33 feet on each side of the center line, as shown on said location plat, for the purpose of a right of way for said State Road No. 4; now, therefore,

Be it resolved, That the County Commissioners of said Martin County be and they are hereby authorized and requested to secure for the Department by purchase or condemnation the said lands necessary for said purposes;

Be it further resolved, That said Commissioners be and they are hereby authorized through their counsel to prepare and sign all necessary pleadings and affidavits, and take all steps necessary and required by the laws of Florida in condemnation proceedings for State Road purposes, and that they be and they are hereby authorized to use the name of this Department in any proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law;

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their counsel be and they are hereby authorized to prepare, execute and file all necessary pleadings, affidavits and documents in connection therewith, and to prosecute such action to completion.

**Brevard County—Project 668**

Upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Whereas, the Department has located and surveyed that part of State Road No. 4 in Brevard County, known as Project 668, and extending from Sharpes to Bonaventure, as is shown by plat of said location on file in its offices, and on file in the office

of the Clerk of the Circuit Court of said Brevard County, and

Whereas, said Department has found and determined, and does hereby find and determine, that it is necessary, wise and expedient to secure, by purchase or condemnation, sufficient lands as will make a width of 33 feet on each side of the center line, as shown on said location plat, for the purpose of the right of way for said Project 668, State Road No. 4; now, therefore,

Be it resolved, That the County Commissioners of Brevard County be and they are hereby authorized and requested to secure for this Department by purchase or condemnation the said lands necessary for said purposes;

Be it further resolved, That said County Commissioners be and they are hereby authorized through their counsel to prepare and sign all necessary pleadings and affidavits, and take all steps necessary and required by the laws of Florida in condemnation proceedings for State Road purposes, and that they be and they are hereby authorized to use the name of this Department in any condemnation proceedings necessary to carry out the purposes of this resolution, or to proceed in their own name as authorized by law;

Be it further resolved, That in the event that they shall elect to proceed in the name of this Department, that their counsel be and they are hereby authorized to prepare, execute and file all necessary

pleadings, affidavits and documents in connection therewith, and to prosecute such action to completion.

#### Contracts Awarded

Upon motion of Mr. Green, seconded by Mr. Bayliss, the following resolution was adopted:

Whereas, bids were asked by the Department for the construction of the projects hereinafter designated, and

Whereas, the firms and individuals respectively named were low bidders thereon; now, therefore,

Be it resolved, That the action of the Chairman in awarding and executing the contracts hereinafter named, be and the same is hereby approved and confirmed, which said projects and contracts are as follows, to-wit:

Project 689, Alachua County, 1.67 miles, grading; awarded to J. W. Hall, contract price \$9,635.83;

Project 526-A, Highlands County, 5.37 miles, rock base, awarded to H. E. Wolfe, contract price, \$129,-852.12.

#### State Road No. 27—Location

The following gentlemen appeared before the Department with reference to the location of State Road No. 27, familiarly known as The Tamiami Trail: D. G. Copeland, representing Collier County;



Project 45. Suwannee River Bridge on Road 1 Between Suwannee and Madison Counties.

Senator James E. Calkins, representing the Boards of County Commissioners of Dade and Monroe Counties, and George C. Cook, representing the Chevalier Corporation.

Upon motion of Mr. Schilling, seconded by Mr. Green, the following resolution was unanimously adopted:

Be it resolved by this Department, That the Chairman be and he is hereby authorized to negotiate with Collier, Dade and Monroe Counties, with a view to working out an agreeable solution of the location of the Tamiami Trail through those counties, and that the Chairman submit a report thereof to the members of the Department.

Upon motion of Mr. Schilling, seconded by Mr. Green, the expense accounts of the members were approved and ordered paid.

There appearing no further business, the Department was adjourned.

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Counties are able to participate in Federal Aid only by co-operation with the Highway Department.

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All Federal Aid apportionments are handled by the Department of Agriculture through the Bureau of Public Roads in co-operation with the State Highway Department.

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Cars cost today 29 per cent less than before the war. Commodities in general cost 67 per cent more.

## Try This Tomorrow

---

**T**HIS MORNING when you started your car it would have been a simpler matter had you done the following:

Held out the clutch in order to relieve the battery of the job of turning over the main driving and countershaft transmission gears in addition to the engine and clutch.

Held your foot firmly on the starter button so as to allow the maximum amperage to flow to the starter motor.

Cranked a few seconds before switching on the ignition in order to save all the juice for the first strain of starting the stiff engine into action.

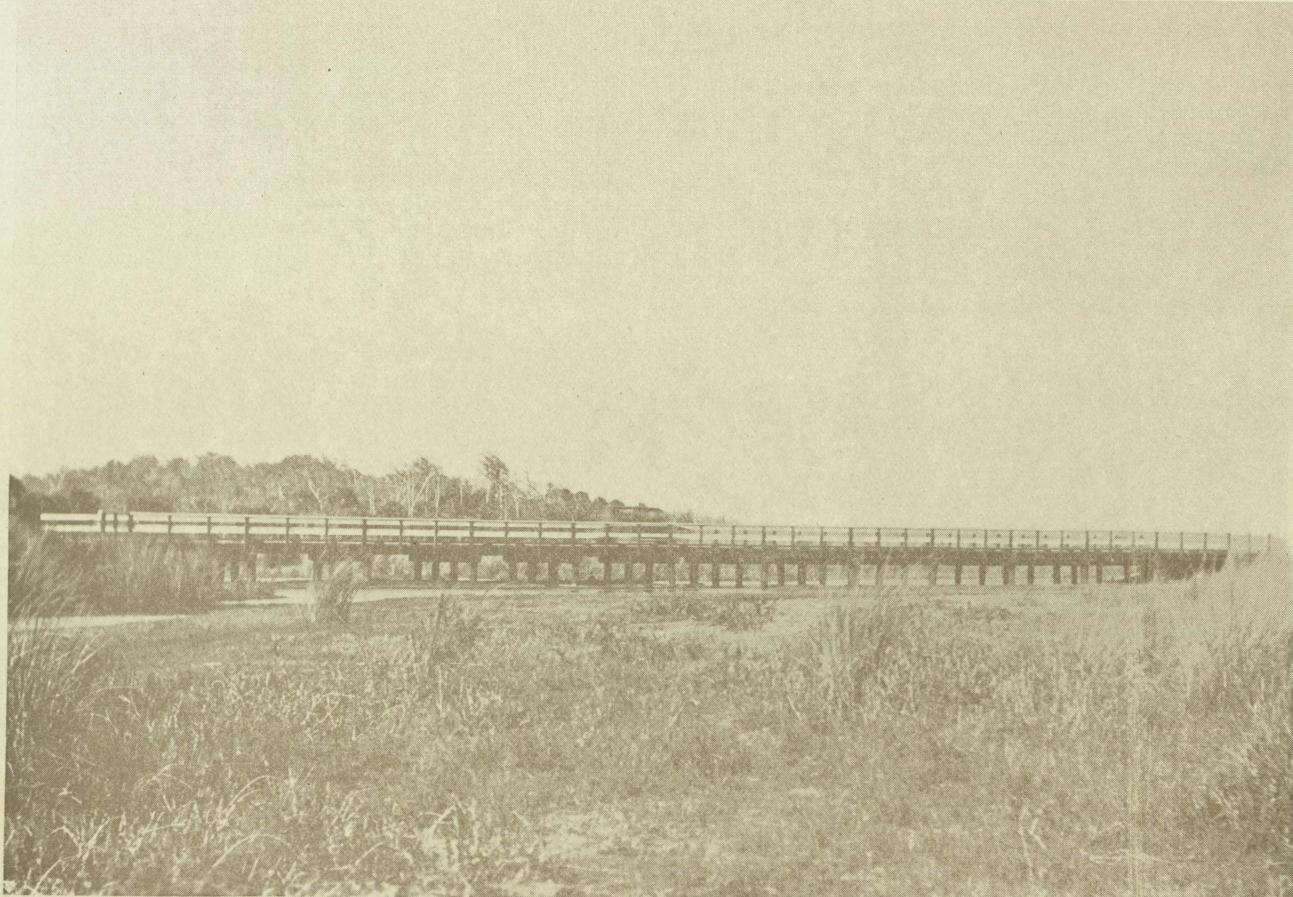
Pushed in the choker instantly upon starting, pulling it out again the instant the engine threatens to stall.—Georgia Highways.

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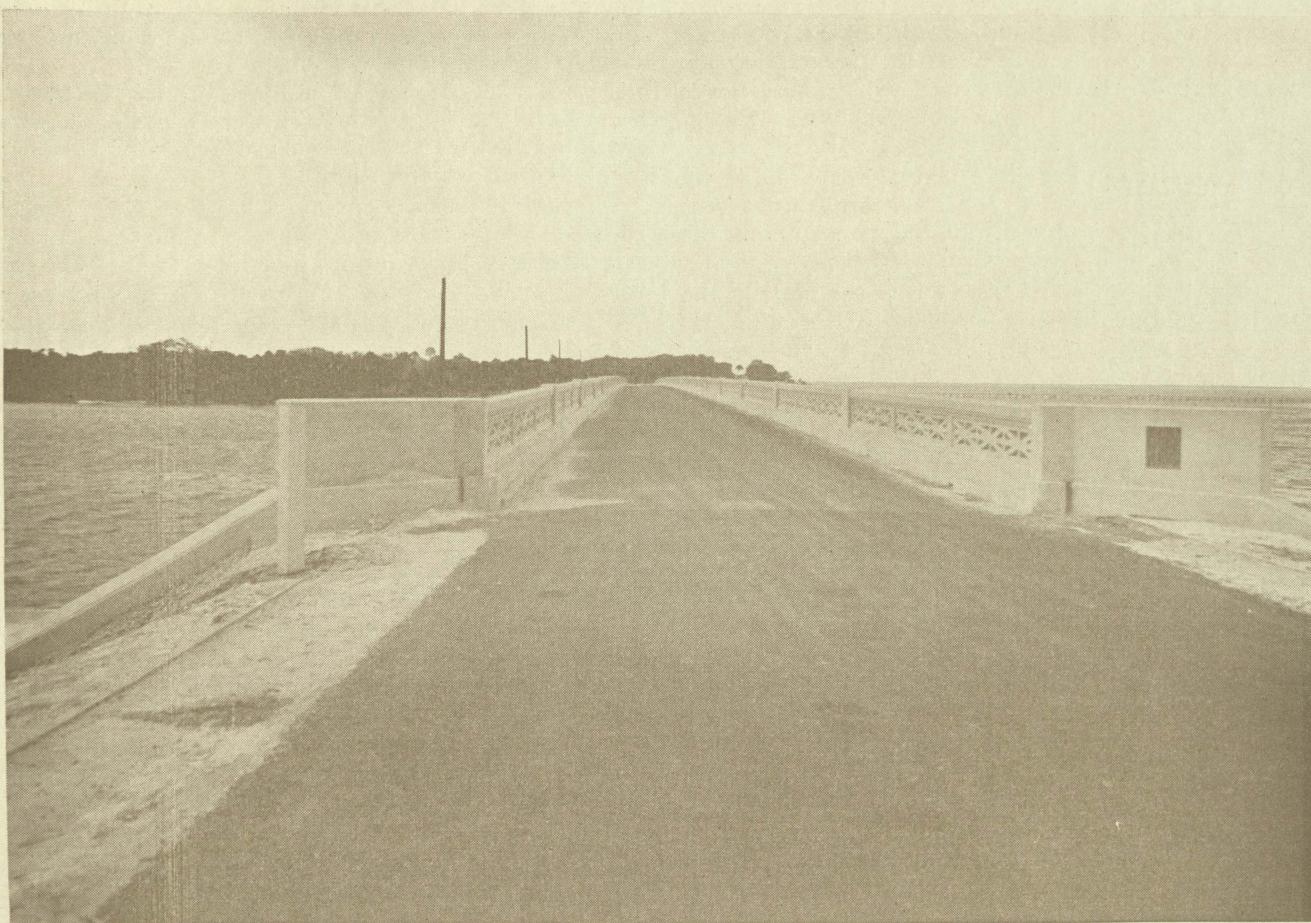
Constant physical examination is made of all completed Federal Aid projects and unsatisfactory conditions brought to the attention of the State Highway Department and repairs must be made within a reasonable time.

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Federal Aid allotments to the State are based upon area, population, and mileage of roads within the State.



Project 597—Road 4. Dixie Highway Bridge Across Head of Indian River.



Project 39-A. Sebastian River Bridge from South Approach.

## Building Roads for the Nation

By FRANK F. ROGERS, President of the American Association of State Highway Officials

WITH the discovery and early settlement of America, at a time when civilization was just arousing from that long inactive period styled in history "The Dark Ages," and when questions of religious toleration were the most absorbing topics, our ancestors were not so much concerned about systems of internal improvements as they were about laws that should secure to them religious and political liberties. They successfully laid the foundation for a system of schools and churches for which they will ever be gratefully remembered, but depended on the trail, packtrain and coasting vessel for means of inter-communication. Had our country been settled at the time of Roman supremacy, no doubt an elaborate and costly system of road building would have been introduced, but our forefathers came from countries that had seen no good roads for hundreds of years and settled, in poverty, on the margins of a wilderness, penetrated only by the savage Indian, with whom commercial intercourse was not at all desirable. Under such circumstances we could not expect them to take up scientific road building which had been neglected for more than one thousand years.

Not until after the close of the Revolution, and the return of Macadam to England, where he began a system of road building that still bears his name, was anything of note accomplished along this line. European activity was then great and Tresaguet and Telford each also became famous for their own peculiar systems of road construction. England and Continental Europe were soon covered with improved roads, but those on the continent were mostly built to facilitate the movement of armies and munitions of war. The spirit of this foreign activity in road building reached the United States and was taken up with considerable vigor in those years which immediately preceded the development of the railroad.

### Early Federal Aid

During the first third of the nineteenth century and before the days of the railroad, the United States was not idle in road building and not less than \$14,000,000 was appropriated by various acts of Congress for the building and aiding in the building of great highways to penetrate the undeveloped West.

One of the results of such undertakings was the National Road extending from Cumberland westerly, passing through Maryland, southwestern Pennsylvania, central Ohio and Indiana, St. Louis, Missouri, being the objective point, but which was never reached. Some \$7,000,000 of Federal funds were expended on this road alone.

The Wilderness Turnpike, a toll road, aided by the Government, formed a similar highway across central Kentucky and facilitated migration from the Virginia settlements westward.

Before the National Road was completed, the authority of the National Government to build any road at all was sharply challenged in Congress by the strict constructionists of the Constitution. On the contrary it was argued that the Federal Government was specifically empowered to set up post roads and that this particular road was primarily a post road. Although this question was first seriously raised as early as 1821, the advocates of the National Highway prevailed for many years and each year the appropriations grew larger and the road continued to push its way westward.

As early as 1811 steamboats in considerable numbers began to navigate the Ohio River, making it easier and safer for immigrants desiring to settle in the West, to go down the River and settle somewhere upon or near the banks and go by wagon roads into the wilderness.

But another enemy to the National Road and Federal Aid was now appearing that was more potent. The railroad had begun to be and the question was in every mind whether the Government should not build a railway rather than put money into the extension of the National Highway. In 1836, an effort was made in Congress to make the unbuilt portion of the National Road a railroad but it failed and the great road slowly moved onward. The controversy at last became so bitter that it is said that the question of continued Federal participation in road building and the protective tariff constituted almost the sole issues between the two great political parties in the decade beginning with 1820, but the railroad at last conquered and the question of Federal Aid was dormant for nearly 100 years.

#### Origin of Associations

During the last decade of 1800, the bicycle became a popular and useful implement of locomotion in and about the towns and even for considerable distances over rural highways where they were in suitable condition for this means of public travel. But in this connection, it is interesting to note that the Massachusetts Supreme Court held that the bicycle is a "machine" and not a "vehicle" and that an operator of a bicycle cannot recover damages because of dangerous places in the public highways.

Coincident with the extensive use of the bicycle, organizations were developed for the promotion of better highways. Indeed, the League of American Wheelmen was perhaps the forerunner of most of the good roads organizations which followed and to quite a large extent the officers in the League of American Wheelmen also became officers in the good roads organizations which followed. For ex-

ample, Horatio S. Earle, the first State Highway Commissioner of Michigan and a nationally known good roads promoter, had been President of the League of American Wheelmen and later was the real organizer and first President of the American Road Builders' Association (at first called the American Road Makers' Association), which is still a large national road organization.

Through the efforts of Logan Waller Page, former Director of the Bureau of Public Roads, the American Highway Association was later organized, of which Fairfax Harrison, President of the Southern Railway, became the first President. For a time each national organization held separate meetings and at these meetings there was more or less discussion of the subject of Federal Aid and also the building of National Highways, solely at Federal expense.

At the Fourth American Road Congress held at Atlanta, Georgia, November 9-14, 1914, under the auspices of the American Highway Association, the American Automobile Association and the County Commissioners Association of Georgia, the first step was taken toward the organization of the American Association of State Highway Officials, which organization more than all others, is responsible for Federal Aid in its present form. A month later in the same year, all of the states were invited to send representatives to Washington, D. C., for a second conference, at which time a committee was appointed to draft a Constitution and By-laws for the proposed Association. This committee also framed the first tentative draft of a proposed Federal Aid Highway Bill.

In September, 1915, a National Highway Convention under the joint auspices of the American Highway Association and the American Road Builders' Association was held at Oakland, California. At that time in the parlors of the Oakland Hotel, a round-table conference was held when the representatives of 25 states went over the proposed bill with great care and made some amendments.

The bill as thus amended was introduced in the next session of (64th) Congress and with some amendments but with all the working features preserved, became the first Federal Aid Act of the present century.

It is known as Public Law No. 156 and the title provides that "The United States Shall Aid the States in the Construction of Rural Post Roads and for Other Purposes."

That the work was well done is now attested by the fact that none of the subsequent amendments have materially changed the working conditions of this original bill.

Up to date there have been five separate Federal appropriations by Congress, totaling \$680,000,000 to aid the states in road building on a 50-50 basis with Federal limitations of from \$15,000 to \$20,000 a mile as provided in the different statutes. In addition to this \$62,000,000 have been appropriated for road building in the National Forests.

The net results of this Federal encouragement in road building, up to July 1, 1925, has been the completion of 46,485 miles of Federal Aid roads in the United States, and 2,427 miles of roads and trails in the National Forests.

**NOTE.**—In the title below the accompanying picture, the words "twenty-inch" should read "eight-inch."



**Project 19—Road 2—Hamilton County. Twenty-inch Lime Rock Base Between White Springs and Genoa Now Under Construction, Showing Sub Grade and Dump.**

#### State Aid

Long before Federal Aid appropriations were made possible to assist the states in road building, many of the states had expended large sums in building or aiding in the building of public wagon roads within their borders.

The beginning of state aid in modern road building was in the last decade of 1800 when New Jersey, Massachusetts, Connecticut and New York built many miles of what were then considered up-to-date highways. All were of the macadam and gravel types. This period represented to some extent the reproduction of the work by Macadam and Telford in England, in the early part of the same century. In fact some 31 states were aiding or building roads with fairly well organized State Highway Departments when the Federal Aid Act of 1916 became a law.

It would now seem that the Federal Government is well organized for carrying on the building of roads in connection with the states. A system of roads, seven per cent of the laid out road mileage of the United States, upwards of 200,000 miles in all, has been designated on which Federal Aid may be received, thus assuring a connected system of Federal Aided Highways just as well laid out and with as much certainty of completion as though the Federal Government, at its own cost, were undertaking the building of a National Highway System.

The question now before the people of this country is: Shall we have a system of well built and well maintained interstate and national highways, or shall we be content with thousands of miles that are well nigh impassable for present-day methods of travel?

Since our last meeting, committees have been appointed and the work practically completed for marking an interstate system of National Highways which will, in the near future, be uniformly marked and have a uniform system of caution, danger and direction signs which will enable anyone to travel from state to state, and in fact all over the United States with no thought of getting lost, and no real danger of getting hurt.

Now that the country is so well organized for carrying on this work, both in the states and in the nation, there should be no thought of a discontinuance of the present plan of road building by the states with the assistance of the Federal Government.

President Roosevelt in his address before the National Good Roads Convention in St. Louis in 1903, after commenting on the fact that every nation of prominence in the world's history, has been a nation of road builders, said: "Merely from the standpoint of historical analogy, we should have a right to ask that this people—this people which has tamed a continent, which has built up a country with a continent—for its base, which boasts itself

with truth as the mightiest republic that the world has ever seen, which we firmly believe will in the century now opening, rise to a position of headship and leadership such as no other nation has ever yet attained, merely from historical analogy, I say, we should have a right to demand that such a nation build good roads."

It is a little disturbing, however, at this time to note that there seems to be, under the guise of reduced taxation, a rather strong propaganda against the continuance of Federal Aid in road construction. President Coolidge has said, or at least the press has credited him with saying, that "When the National Treasury contributes half, there is temptation to extravagance on the part of the state. Yet there are constant demands for more Federal contributions. Whenever by that plan we take something from one group of states and give it to another group, there is grave danger that we do an economic injustice on one side and a political injury on the other. We impose unfairly on the strength of the strong and we encourage the weak to indulge their weakness." Later the same person in an Omaha address, said: "I can see no merit in any unnecessary expenditure of money to hire men to build fleets and carry muskets when international relations and agreements permit the turning of such resources into the making of good roads, the building of better homes, the promotion of education and all the other arts of peace which minister to the advancement of human welfare." This is more encouraging.

#### The Road Building Unit

This immediately brings up the question as to what taxable unit of the Government is best fitted and most able to carry on the work and bear the cost of road building in a manner that will best serve all the people, considering the complexity, in all its ramifications, of the present-day uses of the public highways.

It is impossible to study this question without considering briefly the growth of the highway system in this country. It is obviously impossible for the individual or even the family to build suitable roads or trails over which, even in the crudest way, they could transport the bare necessities of life. Such an attempt would limit transportation facilities to a point that would put us on a par with the life of the nomad or savage.

From this the next step was naturally the township unit, which is the smallest organized political subdivision with powers to levy taxes for highway purposes. For nearly 300 years attempts were made to build roads with the meager funds that could be raised by these small taxing units and one has only to look around at the highways of today in any of the states to become well satisfied that funds raised by such a taxing unit hardly more than made the roads passable. I can show you roads today less than 100 miles from the city of Detroit that have been maintained by this system and which are no better than they were nearly 100 years ago. In spite of this fact, Michigan in 1924 levied township highway taxes amounting to \$12,881,042.46.

The next largest highway taxing unit in all of the states is the county and a great step forward was

made when counties adopted what in Michigan is called the "county road system," laid out a system of county or main market roads and proceeded to improve them with funds levied on all the taxable property of the county, including the cities in which no roads were to be built but which paid in some cases three-fourths or more of all the taxes levied for road purposes.

#### The Automobile Appears

Later in the early part of the present century, an entirely new and modern vehicle for transportation of both men and goods was devised, and today nearly all of the traffic over our public highways, whether for pleasure or business, is carried by motor vehicles, and motor vehicle traffic does not stop at county lines, neither does it stop at state lines. Therefore the next step in advance was to bring in a still larger taxing area and levy tribute on all the taxable property of the state for the purpose of building a system of state highways, wide enough and strong enough to safely carry in motor vehicles as much of the passenger and freight traffic of the state as may be desirable or economical, regardless of the fact that many poor counties could not build the roads that are necessary to cross their borders in such a state system, even if they were to contribute a sum equal to their total valuation.

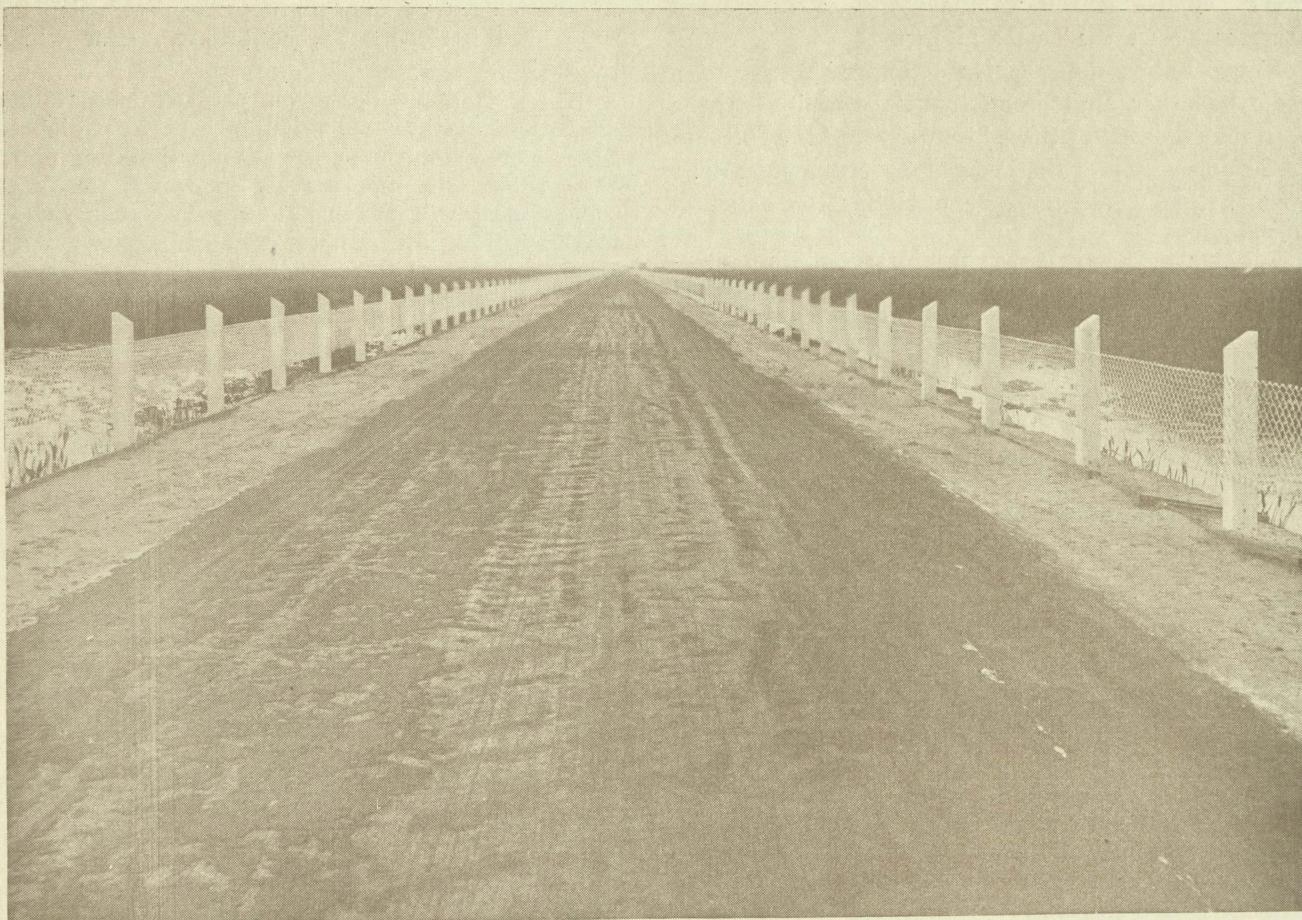
Naturally I am better acquainted with conditions in Michigan than in the other states and here we have whole counties with valuations of less than two and one-half millions of dollars and one other county, namely, Wayne, in which the City of Detroit is located, with a valuation fifteen hundred times that of the poorest county in the state. It was unthinkable that a state system of roads could be built by taxing each county for the full cost of the improvement of its roads, and while Michigan, up to this time, has required the counties to contribute a part of the cost of both trunk line and Federal Aided roads, the poorest counties have only been asked to contribute five per cent of such cost as compared with twenty-five per cent in nearly one-half of the richer counties of the state.

The same line of reasoning which says that New England should not be taxed to build roads in Nevada, New Mexico or any of the western mountain states, applies in a smaller way as between the richer and poorer counties of every state and any law which will prohibit the taxing of the richer counties to aid the poorer counties, would at once make impossible any continuous system of state roads.

#### Interstate Roads

If we admit that a system of interstate and national highways is desirable, and we must admit it, unless we are to say to the motorists of any state, "You shall use only the roads within your borders and have no right to go into another state and wear out the roads which have been built by that state entirely at its own expense," we have a right to demand that they be built wholly or at least partially

(Continued on Page 16)



Project 534. Road Under Construction, Surface to Be Treated with Asphalt. This View Looking West, a Section of Road 24.

## The Rural Postal System and Good Roads Develop Character and Create Wealth

**F**ORTY thousand rural letter carriers daily distribute to tens of thousands of people letters, newspapers and magazines. In old days, before the establishment of the rural system, these millions of farmers and their families lived a good many miles from the nearest postoffice. Some of them rode several miles every day to get their mail, losing much time which could have been employed on the farm. Many would go only once or twice a week to the nearest postoffice, and, therefore, were but slightly in touch with world affairs or with market conditions for their crops.

Under the rural delivery system a large proportion of the farmers of the country now get a daily paper within a few hours after it is printed. These papers and letters and magazines are delivered at their homes or to the little boxes at their gates. In olden days these millions of country people were denied the advantages of prompt mail delivery which city dwellers have, and even at the best they lost many millions of hours every day in going to and from the postoffice, and, what was even more important, they lost touch with the outside world.

Today through the rural free delivery service 40,-

000 men, traversing hundreds of thousands of miles of highways, bring the farmers in touch with the outside world, and thus enable them to keep thoroughly posted as to the movement of trade and commerce, world affairs generally, and the rise and fall of the prices of the things which they buy and sell.

It is a wonderful revolution which has taken place. It gives to the daily papers an opportunity for reaching the country invaluable to the country people. It stimulates the ambition and desires of these country families for broader knowledge of what is going on, and in their houses are now found magazines and weekly and daily papers to a greater extent than can be found among any other farming class in any other country of the world.

Wherever good highways exist this rural free delivery service can be carried on to full advantage. The good highway makes it possible for the rural mail carrier to travel with greater speed, to do his work more thoroughly, and improved highways would be worth their cost if they did but little else in opening these country districts to the rural carrier. In some places the country roads are so intolerably bad that the Government wisely cannot attempt rural service.

As "commerce follows the flag," so rural mail service follows the better highway.

If we studied the question of improved highways from no other angle than this, it would easily be seen that the cost of these highways and the full and free co-operation of the Federal Government in their construction would more than justify the expenditure.

Looking to the agricultural interests of the land—and that really means to the prosperity of the whole country, for upon farm prosperity depends the prosperity of all other interests—good highways should be built to such an extent that no fairly well settled section would be deprived of the benefit of regular rural free delivery.

This service is costly to the country. It has added many millions of dollars over and above the income therefrom to the maintenance of the Postoffice Department, but it is worth to the country many millions of dollars more than its cost. It is not always possible to restrict the cost of Governmental work intended for the welfare of a people to the direct financial returns that can be shown on the books. Everything which ennobles a people, which broadens their information, which develops them mentally and spiritually is worth the money spent for the results achieved.

The Federal Government in undertaking to develop this rural system should be held directly responsible for the heartiest co-operation in financing the building of these highways as a part of the Government's justifiable work in this rural delivery service. Its value has been inestimable and every year increases its influence for good, but it cannot attain unto the full measure of its potentialities except as the Federal Government co-operates with state and county governments in the building of highways to spread like a net throughout the land. The advance thus created in education, in patriotism and in the broadening of the thought of the farmers and their families would be worth the cost even if these roads did not result in the tremendous advance of material prosperity wherever they are built. Looked at from either standpoint, they are worth more than they have cost, and worth more than they will cost in the future.

This is one way in which the nation should study highway building and its relation to the welfare of the land, but there are an infinite number of other ways in which highway building should be considered as one of the prime requisites for bringing about a nation-wide unity of sentiment and action and patriotism. As this country could not prosper with one-half free and one-half tied to slavery, so no country can reach its best advancement with more than one-half of its people enjoying the privilege of paved streets and other advantages of city life while the other part lives in sections of bottomless mud roads, or sand roads equally bottomless, both of which are destructive of material prosperity and tend to drag the people down into a lower moral and educational standard.

Wisely enough may the people of the country as a whole unitedly determine that wherever population justifies there shall be improved highways. No man

can measure the value of highways in developing the people and bettering the conditions under which they live.

North Carolina and Florida are two outstanding illustrations of the tremendous prosperity which to a very large extent has come through building highways. Wherever one travels in North Carolina, through the towns which but a few years ago were backward, with unkempt streets, badly paved, with inadequate school facilities and hotels that would disgrace a Western mining town, there are now to be found, and largely as a result of highway work, superb schools, splendid homes, well-paved, clean streets, and an air of thrift and prosperity which almost staggers one who saw these conditions as they were eight or ten years ago and who now sees them as they are today.

Florida was one of the first states of the South to build good highways. These attracted motorists by the tens of thousands. They spread abroad the knowledge of Florida's attractions and the charm of its climate, where motoring is a delight through nearly every day of the winter season.

These highways were actively begun fifteen or sixteen years ago, somewhat in advance of those in most other states, but the traffic has so enormously increased that their width, with rare exception, is wholly inadequate for the tremendous congestion of automobiles, motorbuses and motortrucks. From one end of Florida to the other there is an ever-moving panorama of these vehicles of modern days. They come and go in an endless stream which no man can count. They are a part of that wonderful progress of the state for which those who had the vision fifteen or twenty years ago in building highways are largely responsible.

There are many other states in the South and Southwest which could with equal profit spread their highways into every part of that territory and quicken into fuller life every influence for good upon the people thus reached. These highways are a blessing of untold value. No man can measure their influence for good and the effect they have upon the building of character and bringing into life latent power in hundreds of thousands of people.

Some months ago the story was briefly told in the Manufacturers Record of what Montgomery County, Alabama, by reason of good highways, has done in becoming the foremost county in the country in the maintenance of a system of schools which reach in their influence every boy and girl in the county—it matters not how far back in the woods they may live—and by which autobuses using these highways bring the children out of the dark places of the county into the light of educational work. What that county has done is a striking illustration of the immeasurable possibilities in the ennobling of the lives of thousands of children for better things, which every other county in this country should attempt to emulate.

Good highways, well maintained, are the greatest creators of wealth, material wealth, and educational and moral wealth likewise, in connection with motor traffic which the mind of man has yet devised.—Manufacturers Record.

## Highway Research Explained

PROF. S. S. STEINBERG, University of Maryland

This Address Was Broadcasted from Station WCAP, Under the Auspices of National Research Council and Science Service.

MOTHER SHIPTON'S prophecy made three hundred years ago that "carriages without horses shall go" has been abundantly realized to the people of the United States. We now have eighteen million motor vehicles on our highways. And yet we appear to be far from any saturation point. Indications are that motor transportation is going to develop beyond anything we can now visualize, and in so doing it will continue to make changes in our daily life and in our business, in our cities and in our towns. Upon the motor highways of the future will depend how rapid, and in how satisfactory a manner, this development will take place.

This year, as last year, another billion dollars will be expended in highway work, thus indicating that the people of the country expect the highways to keep pace with the increase in number of motor vehicles. Whereas, a few years ago a road contract two miles long was considered a large undertaking, now contracts are let in ten and twenty mile stretches. In one day recently Pennsylvania let road contracts totaling twelve millions of dollars. The previous record was that of Illinois with a letting of nine million dollars in one day. As a result of this stupendous program, it has been truly said that the construction of highways will be the most active American industry during the current year.

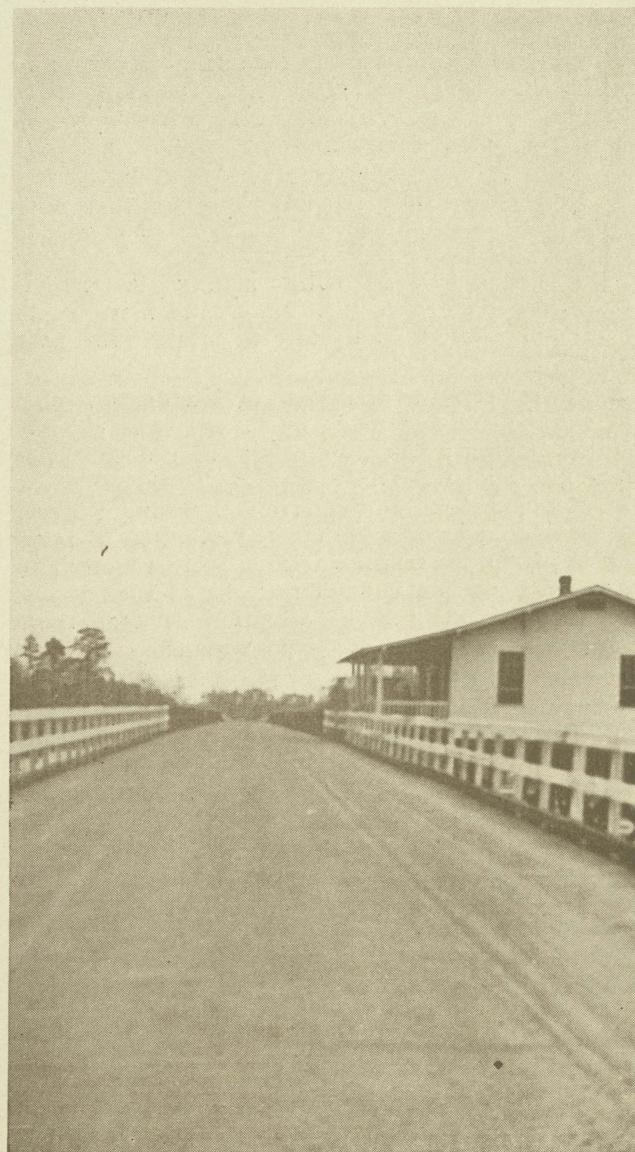
Fortunately, highway engineers realize the necessity of having this great development of our highway system proceed on sound principles of engineering and of economies. This is evidenced from the fact that the Federal Government, the state highway departments and many universities are engaged on an extensive program of research into the problems affecting highway finance, construction and maintenance. A recent census showed that there are almost 500 highway research projects under way throughout the country. It is the function of the highway research board of the national research council to co-ordinate these researches, spread as they are over such a wide territory; to prevent duplication of effort, by putting the workers in touch with one another; and finally to make known to each state the findings which may be immediately applied in practice; thus resulting, not only in the better construction and maintenance of highways, but also in a great saving in the taxpayer's dollar.

The highway research board thus occupies a unique position as a service organization to highway engineers and to the public, and it enjoys the complete confidence of all agencies throughout the country engaged or interested in highway development. As indicative of the personnel of the board and the interests represented, we might cite that Dean A. N. Johnson of the University of Maryland is chairman; W. H. Connell of the Pennsylvania state highway department is vice-chairman, and C. M. Upham, state highway engineer of North Carolina, is director. The executive committee also includes Professor T. R.

Agg, of Iowa State College; A. J. Brosseau, president of Mack Trucks, Inc.; Dr. H. C. Dickinson, of the United States Bureau of Standards; T. H. MacDonal, chief of the United States Bureau of Public Roads, and W. Spraragen of the national research council.

Where research of a general character needs to be undertaken which a single organization would not be justified in conducting, the highway research board has been assigning an expert to carry on such investigation. The results are then made available to all interested agencies. As an example, there is now nearing completion a nation-wide survey on the

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Bridge Over Choctawhatchee River Between Holmes and Washington Counties.

**BUILDING ROADS FOR THE NATION**

(Continued from Page 12)

at national expense; and here the courts step in and say we must build for the other states. When the man from Boston desires to motor to San Francisco, he may take any through highway but he will be just as loud in his complaints about the bad roads in Iowa, Wyoming or Nevada as he is about any imperfections he may find in the roads in Massachusetts.

Now let us compare the ability of Nevada and Massachusetts, which have approximately the same road mileage, to construct highway systems that will be entirely satisfactory to the Boston traveler. Federal statistics show that the entire wealth of the State of Nevada is \$541,716,800 and that it has 22,000 miles of public wagon roads to maintain. In other words, the average wealth per mile of road in Nevada is but \$24.600. Thus it is plain that if Nevada were required to improve its entire road mileage at an average cost of \$25,000 a mile, it would take more money or property than the people of that state possess.

Applying the same rule to Massachusetts, we find a valuation of \$12,980,893,000 with a road mileage to maintain of only 20,525 miles. In other words, it has a valuation of something over \$630,000 per road mile. Thus it could improve its roads at an average cost of \$30,000 a mile (about the average cost of paved roads) and still have \$600,000 a road mile to live on, whereas if Nevada undertook to improve its entire road mileage in this manner, its citizens would have to go to the poor house, and there would be no money left in that state to support the poor house.

Again referring to the State of Michigan, a plan was worked out and made into a law whereby the counties having a valuation of less than \$50,000 per trunk line mile were only required to pay five per cent of the cost of building trunk line and Federal Aid roads, but counties having a valuation of more than \$500,000 per trunk line mile were required to pay twenty-five per cent of the cost of such roads, while counties ranging in valuation between these extremes paid proportionate percentages.

If this rule were applied to the states, I find that here are eleven states with valuations of less than \$50,000 per road mile, while two of them, viz. New Mexico and Wyoming, have valuations per road mile less than the State of Nevada, which has already been mentioned. In fact, New Mexico has a valuation per road mile of less than \$18,000 and Wyoming a valuation of but slightly over \$21,000 per road mile. On the other hand, the States of Massachusetts, New Jersey and Rhode Island all have valuations of more than \$600,000 per road mile. In fact the State of Rhode Island has a valuation of nearly \$802,000 per road mile. It is therefore unthinkable that states with these low valuations, unaided by the richer states, can ever be expected to improve their public roads even on the trunk lines in a manner that will be satisfactory to the traveling public, much less in a manner that can reasonably be expected of the richest country in the world.

Is it fair and equitable to tax a group of rich

states to build roads in the poorer states of the nation? My answer would be that it is just as equitable as it is in Michigan to tax Wayne County to build roads in Roscommon County, which county has but a small fraction of the wealth of Wayne, and it can be said to the credit of Wayne County that it has never dissented to this plan. The people of Wayne travel over the entire state and take just pride in a system of state highways that covers all of the counties of the state, whether rich or poor, sparsely settled or populous.

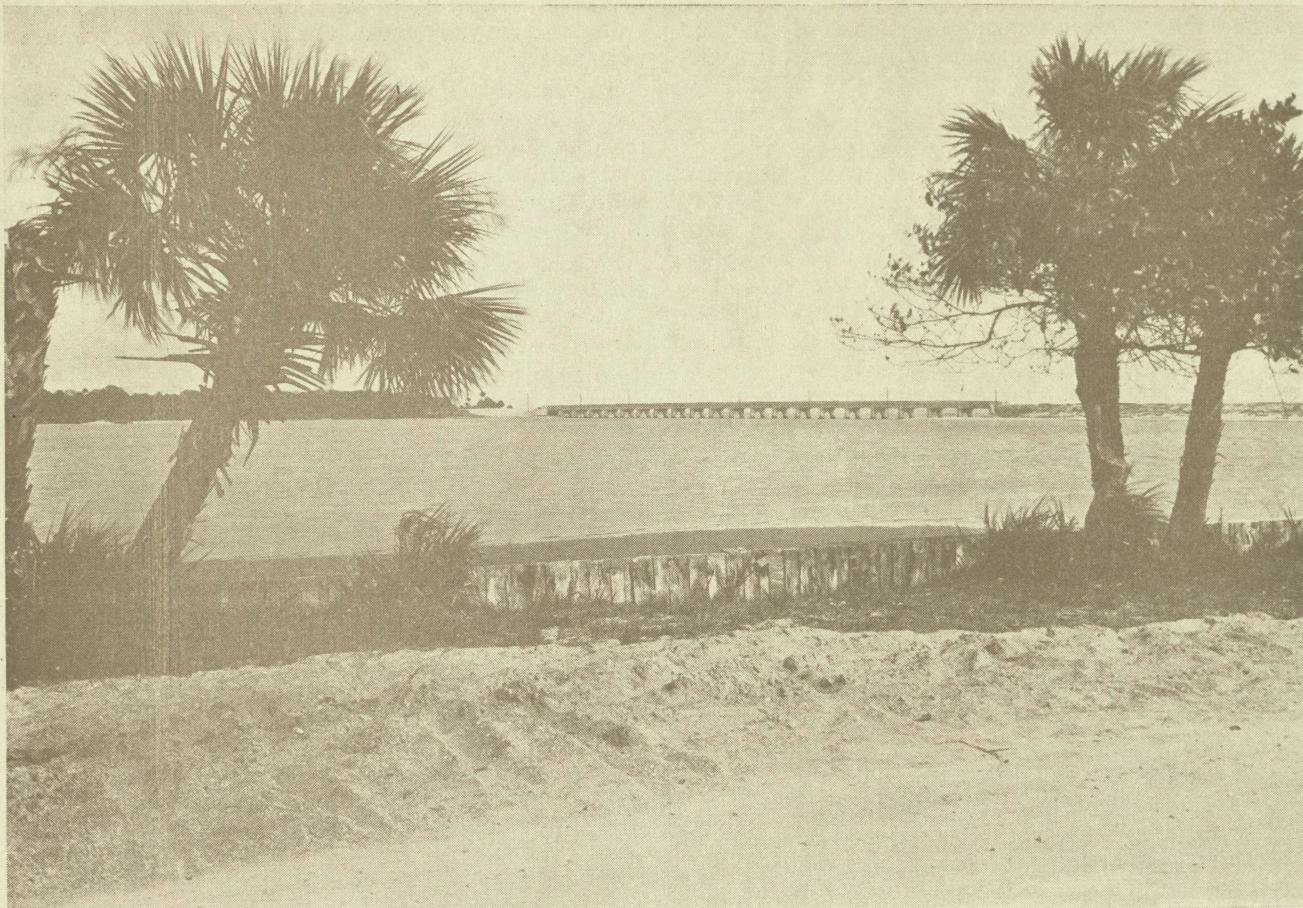
Tables have been worked out to show that a certain group of states pay nearly all the taxes and that it is not fair to tax them for roads in the poorer states. The same reasoning would lead us to say that the rich counties in any state should not contribute to the cost of roads in the poorer counties of that state: that the people in the cities should not contribute to the cost of building roads in the country and the logical trend, if carried still further, would lead us to say that we shall not tax any rich political subdivision of a state or county for any kind of improvements in the poorer ones, and if carried into other lines of taxation, we might insist that families without children and bachelors should not be taxed to educate the children of their more fortunate but poorer neighbors.

**Who Pays the Taxes?**

These tables show in detail that a certain group of fifteen states contribute upwards of 88 per cent of the internal revenue tax, which is much greater than the percentage of Federal Aid which they receive in return. To a large extent, this is true, at least on the face of the returns and just what is intended and necessary if we are to have unbroken lines of roads reaching from coast to coast and from Canada to the Gulf.

But while apparently this is all true, it is not true to the full extent that appears on the surface. Michigan happens to pay the largest internal revenue tax per capita of any state in the Union, yet it has always whole-heartedly supported Federal Aid in road building. However, we will see what happens in Michigan and that principle governs in the case of other states and on all commodities on which an internal revenue tax is collected. A large part of the Federal tax paid by Michigan is on account of the automobiles we manufacture and sell. Let us see who pays the tax. We make cars and sell most of them to the 47 other states of the Union. There is a 5 per cent tax on automobiles. If you buy a car you will at once find out that you pay five per cent war tax, so-called. It is paid to the local dealer, who turns it over to the jobber and he in turn, to the manufacturer, who passes it on to the Government, and thereby Michigan gets credit for paying a large internal revenue tax, 47-48 of which, if collected from the sale of autos, is paid by the other states, which get no credit for it in the returns to Uncle Sam.

North Carolina manufactures millions of dollars worth of tobacco in various forms and thereby collects a large amount of revenue and turns it over to the Government and gets credit for something which the other fellow pays.



Projects 39-A and B. Sebastian River Bridge and Approaches Looking East from Old County Road at South End of Old Bridge.

In fact it is a general principle of taxation in all forms, that it is passed on so far as possible, to the ultimate consumer who, in a majority of cases, lives in some other state.

We might go further and show that many of the taxes paid by the corporate interests centered in New York and other population centers, earn the money on which they are taxed, on account of industries that lie entirely out of the holding state and all the earnings are collected from a business and mostly from people who are residents of other states, which latter states receive no credit for what they contribute to such Federal taxes. For example: The Union Pacific in 1923 paid an income tax in New York of \$4,500,000 and yet this road does not operate east of Omaha and Kansas City—half the length of the continent from New York State. The Southern Pacific paid a tax of \$5,000,000 in New York City and this road does not run any nearer New York than New Orleans. No attempt will be made to cite other and similar instances but they are numerous and when taken into account, New York would actually not be paying any more, if as much as its just share of Federal taxes, considering its total wealth. It is not a far cry nor illogical to say that a portion of that money rightfully belongs to the states that produce it—in fact much more so than to say that a certain group of states (which for a large part of such tax, only act as a collection agency) pay

more than their share of the taxes and should be exempted from paying for improvements like roads in other states, especially those in which this tax money is earned.

#### Interstate Commerce

For some time the motor vehicle has been recognized not only as a pleasure vehicle but also as a commercial vehicle and practically all of the states have passed laws providing for licensing and regulating their use upon the public highways and some states have made them common carriers (Act 209, P. A. 1923 Michigan).

An attempt to license and regulate the use of such commercial vehicles on the highways of the states has led to more or less complication and some litigation where their use extends from state to state. The Michigan Public Utilities Commission et al., Appellants, vs. Coarl W. Duke, doing business as Duke Cartage Company, is the name of a case which was appealed to the United States Supreme Court from the District Court of Eastern Michigan.

The Plaintiff was doing an interstate trucking business between the cities of Detroit and Toledo, having three contracts to transport automobile bodies manufactured in Detroit and intended for use by automobile manufacturers in Toledo. This company employed 75 men and operated 47 motor

vehicles and trailers on the public highways of Michigan and Ohio, but because this contractor had no other business and did not hold himself out as a carrier for the public, the Courts held that he was not a common carrier under the terms of the Michigan Statute.

The Courts have held, however, that in the absence of national legislation covering the subject of the "Use of Interstate Highways" that "A state may rightfully prescribe uniform regulations necessary for public safety and order in respect to the operation upon its highways of all motor vehicles—those moving in interstate commerce as well as others; that a reasonable, graduated license fee imposed by a state on motor vehicles used in interstate commerce does not constitute a direct burden on interstate commerce, and that a state which, at its own expense, furnishes special facilities for the use of those engaged in intrastate and interstate commerce may exact compensation therefor, and if the charges are reasonable and uniform, they constitute no burden on interstate commerce." Continuing the Court said: "It is well settled that a state has no power to fetter the right to carry on interstate commerce within its borders by the imposition of conditions or regulations which are unnecessary and pass beyond the bounds of what is reasonable and suitable for the proper exercise of its powers in the field that belong to it." Further the Court said: "The Commerce Clause of the Constitution does not deprive the State of the right to reasonably regulate under their police power the use of their public highways and to that end to require a license for the privilege of such use, and impose a reasonable charge therefor, \* \* \* and that such license tax for use may include a reasonable charge for upkeep. The amount of the privilege tax imposed by a state for use of its highways need not necessarily be limited, even to those engaged in interstate commerce, to the actual cost of regulation but may include a reasonable compensation for use of the highways and a fair provision for anticipated repair and improvement."

In the Michigan case above cited, the Courts did hold that it was unlawful to impose a burden on interstate commerce, requiring the carrier to provide insurance or indemnity bonds for the protection of persons or property carried, as that would impose a direct burden on interstate commerce.

Referring to the Federal Highway Act which requires that all highways constructed or reconstructed under the provisions of this Act shall be free from tolls at all times, it was ruled that this provision "does not deprive a state of the rights in the exercises of its police power to enact reasonable regulations for the use of such highways including the imposition of license fees."

The Courts also said: "The movement of motor vehicles over highways is attended by constant and serious dangers to the public and is also abnormally destructive to the ways themselves. Their success depends on good roads, the construction and maintenance of which are exceedingly expensive. \* \* \* But that the amount of charge and the method of collections are primarily for determination by the state itself and so long as they are reasonable and

are fixed according to some uniform fair and practical standard, they constitute no burden on interstate commerce."

The conclusion of this matter would seem to be that the Courts have positively held that motor vehicles transporting goods or persons from state to state over public highways, are actually engaged in interstate commerce. Therefore the states can not place undue restrictions on the vehicles thus engaged.

If it were not for such laws, a poor state might hedge itself about with such drastic legal restrictions as to the use of its highways as would prevent the passenger cars and trucks from a richer neighboring state from destroying them.

This being impossible, it would seem only fair and honest to consider the whole country as a road building unit and tax all its resources in a just and equitable manner for at least enough to aid in building a system of interstate highways satisfactory to their users and in keeping with what can reasonably be expected from the richest nation in the world.

#### Are State's Rights Violated?

The claim is made that the principal of home rule and state's rights are violated. To be sure if the Government is to become a partner with the states in road building, it must have a say as to how the Federal money shall be spent. Congress has been careful about that. For many years Michigan was a state aid state and distributed millions of dollars to the counties and townships in the state for roads that were required to be built in accordance with state specifications and required to pass state inspection when completed. No one questioned that this was a necessary safeguard to the state's funds.

In the case of Federal funds, that is, no doubt, equally necessary. So far as Michigan is concerned, it has had a part in the laying out of the routes, preparing of the plans and specifications and given its assent to the types of roads to be built and therefore can not well object when the Federal Government insists that the plans and specifications be rigidly followed. We have not lost any of our initiative nor self-respect because we have been partners with the Government during the whole transaction. We sometimes differ on engineering points with the engineers of the Government and proceed to argue out our differences and expect to do so in future. So far I think it is a draw game. No doubt other states have had the same experience.

In conclusion I wish to be emphatic in saying that there is no loss of initiative when the State and Federal Engineers jointly strive for the best there is in highway practice. Under such a system most of the states have produced a rather large number of trained engineers who are in charge of the work and who, for the most part, take pride in building the best roads they can produce. Neither group feels that it has lost anything by contact with the other and I can not see wherein any state's rights or local home rule principle is violated in the kind of partnership, which is producing at the rate of between 11,000 and 12,000 miles a year of the best roads of the various types that were ever built on the surface of the globe.—American Highways.

**HIGHWAY RESEARCH EXPLAINED**

(Continued from Page 15)

economic value of using steel reinforcement in concrete roads. In some states it is the practice to incorporate in the concrete steel rods or mesh, using half a pound or more to every square foot of surface. In other states no reinforcement is used. As this item alone may amount to many thousands of dollars per mile of road, it is necessary for the highway engineer to know whether the use of reinforcement is justified, and if so, the proper amount needed for the greatest economy.

Another investigation, just commenced under the auspices of the highway research board, is on the development of earth roads. Although we may now travel with speed and comfort from one end of the country to the other, we must not forget that 85 per cent of all our rural highways are still in a state of nature, and many of them impassable for several months of each year. It may help us to realize what a great economic loss this means when we consider that one-third of all the automobiles in use are owned by farmers, most of whom are compelled to use these earth roads. This problem is an especially significant one in the Western States where there is a great mileage of highways to improve and maintain and the funds are so limited that any extensive program of surfacing with the most costing types of pavements is out of the question. Many attempts have been made to solve this problem. For instance, in North Carolina, where they have a sea of sand stretching for hundreds of miles along the coast, the state highway commission has developed, as a result of research, a sand-asphalt surface made up of a mixture of 93 per cent local sand and 7 per cent asphalt. This renders very satisfactory service to that locality. In South Carolina, Illinois and California, tars and oils are being used, either by mixing with the earth or as surface applications. In the Southern States either top soil of the fields, or a mixture of sand and clay is used. In Iowa, Missouri and South Dakota, experiments are being conducted in which the natural soil is mixed with hydrated lime, or in some cases with Portland cement, in an attempt to stabilize the natural soil.

Realizing that this is one of the most important problems confronting highway engineers, the highway research board is attempting to co-ordinate completed and current research on this subject with the hope of developing a low-cost road surface that will be suitable for light traffic.

Another investigation about to commence under the auspices of this board is that on culvert pipe. In highway construction many types of pipes are used for culverts, including cast iron, concrete, corrugated metal and vitrified clay. The object of this investigation will be to set up a basis of comparison of the different kinds of pipe in order that highway engineers may be properly guided in the design of these drainage structures.

The annual mileage of roads under construction and maintenance is so great that any little economy that research may effect means, in the aggregate, an enormous saving. As a result of research into the mixing of concrete, it was discovered that ordinarily

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this material is mixed far too wet. It was shown that by the use of but one pint more water than necessary for each bag of cement, the strength of the resulting concrete was reduced to the same extent as if two or three pounds of cement were omitted.

To most people concrete would not suggest itself when thinking of an elastic material. Yet to a certain degree, concrete is not unlike rubber in compressing under an applied force and in its ability to spring back to its original dimensions upon release of the load. In the study of concrete, it is necessary to know accurately the elastic curve to which this material responds. For this purpose cylinders are used. These are made in the laboratory or are bored from the concrete roads in service. It is very evident that the changes in height of the specimen due to supplied loads are small.

To detect and to measure these deformations, as they are called, very sensitive instruments have been devised. One of the simplest and most practical methods in use consists of two small mirrors properly mounted on the concrete cylinder and so arranged as to rotate when pressure is applied to the specimen, and to reflect graduated scales which are sighted at through a telescope. This set-up is so sensitive that changes in height amounting to two and one-half millionths of an inch per inch height of specimen can be observed. When we realize that this measurement is less than one-thousandth of the thickness of a sheet of ordinary newspaper, we begin to appreciate how small a quantity we are discussing. This device has been very successfully used by Dean A.

N. Johnson in his research work at the University of Maryland.

The laboratory and field methods developed by research are used in maintaining a rigid control over all materials that enter into the building of a highway. Before the use of any materials is permitted in the work, a sample must pass an appropriate test and meet a fixed standard. Research has made possible the use of many local materials, such as gravel and stone, formerly neglected or thought unfit for road purposes. Due to the vigilance of the highway engineer over the quality of materials as well as the methods of construction, the public is assured that there is an adequate return for every dollar spent on highway work.

As we review the accomplishments of highway research during the past few years, we have reason to feel gratified at the splendid progress made. Although we cannot foretell, with certainty, the highway engineering problems of the future, we may rest assured that so long as highway engineers continue to be guided by the spirit of scientific research our future highway development will remain in safe hands.

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If biologists are right in their assertion that there is not a perfect man today on the face of the globe, a lot of personal opinions here and there will have to be altered.—Detroit News.

#### ELECTRIC TRANSMISSION LINES ON THE RIGHTS OF WAY OF STATE ROADS

At the quarterly meeting of the Department, held early this month, the Department confirmed and reaffirmed a resolution adopted early last year, under the terms of which the chairman is authorized to grant permits to electric light and power companies, serving the public, to place and maintain their lines along the rights of way of State roads, under such regulations and agreement as the chairman may prescribe.

Recently, the chairman referred back to the Department the matter of the policy to be adopted on this subject, and the result as indicated in the paragraph above follows careful investigation and study on the part of the officials of the Department.

Inquiries addressed to the Highway Departments of the States of the Union revealed that in every one the practice is permitted either by statute or by sufferance of the State Highway Department or other designated authority. At this time a new form of permit is being prepared which will adequately and properly safeguard the rights of the State and the public.

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If the magazines running the series "Unknown Wives of Well Known Men," is in the mood to listen to suggestion, we'd take it as a favor if they would put the reverse English to it for one issue anyway. What we would fain know is what Mr. Lydia Pinkham looked like.—Macon Telegraph.



Project 40-A. Looking North Near Malabar. Surface-Treated Base.

## Reinforcing Bars for Concrete

Made in the United States from new billet steel.  
Intelligent, dependable service by expert bridgemen.

## Dudley Bar Company

BIRMINGHAM, ALA.

### LOCATION OF STATE ROAD NO. 27

(Continued from Page 5)

much propaganda has been spread with reference to the time it would take to build the Tamiami trail. The task is gigantic, will take at least the time mentioned to complete and will cost an enormous sum of money.

This is the first statement that has been issued by the department with reference to the time required for the completion of the trail and cost of construction. The chairman stated that he thought the people should know the truth about the matter. And the statement he made is based upon unbiased and scientific information, and should put at rest all claims that have been made and may be hereafter made to the contrary.

### MUD—MONEY—MOTORING

**M**UD is the world's champion Joykiller. Nobody likes mud, excepting children who make pies of a more or less doubtful edibility.

If the money annually spent in misdirected or undirected motoring throughout the United States could be conserved and collected for the construction of highways, it probably would amount to proportions not only astounding, but sufficient to build many hundreds of miles of roads.

Motoring as a modern form of recreation has come to stay. Annually tens of thousands of motor car owners are going out upon the open road to become

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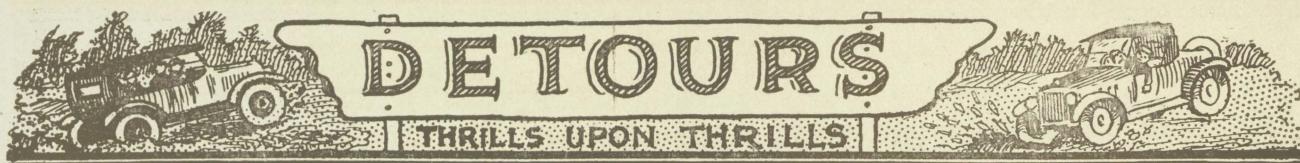
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acquainted with their countrymen in far off parts of the land. They are finding that Kanass or Louisiana are not such distant neighbors of California or Oregon after all.

But some motorists do not make the best of things as they very well might do. So many of them overlook the automobile clubs whose services make of motoring a greater pleasure and a more satisfactory means of making the most of a few days or weeks in the greater outdoors.

And even as motoring has come to stay, so too, has the automobile club entered the economy of the modern scheme of things—entered with such a degree of practicality and efficiency that it has come to be recognized even by the veriest tyro in the art of making the great American dollar go farthest along the road to the enjoyment of the motor car.

A tour in an automobiles is either pleasurable and profitable from an educational standpoint or not, depending upon the roads over which one travels. If one starts out joyously a journey of some hundreds of miles expecting to find good roads, but founders one's car in the mud before the end of the first day and flounders around for a day or two disgusted with one's automobile because of wrong information about the route to the destination, then there isn't much pleasure in the trip. The joy has been killed. But if one starts out bright and early in the morning with the route all outlined, with the good roads clearly defined, there is bound to be less disappointment and more joy before the journey is over—Kansas Highways.

**No Such Place**

"Where did the car hit this man?" asked Lawyer Garner when questioning the attending physician at the trial.

"At the junction of the dorsal and cervical vertebrae," responded the doctor.

The foreman of the jury rose in his seat and remarked: "I've lived in this county for upwards of fifty years and I know every crossroad, but I never heard of any such place; I believe it's a made-up case."

"A fellow wrote me a letter saying he'd shoot me if I didn't keep away from his wife. I'm terrified!"

"Well, why don't you keep away from his wife?"

"He didn't sign his name."

**Alarming**

Eve: "Mrs. De Trop has blue blood in her veins."

Adam: "Has she taken anything for it?"—Allston (Mass.) Recorder.

**Presence of Mind**

During the World War one of the great steamships that was used as a transport for soldiers was on her way across when a torpedo boat was sighted. In anticipation of the danger they were in all on board were lined up on deck.

There was a deathly hush for an instant, when suddenly from down the line a negro's voice rang out: "Is dar ennybody heah dat wants to buy a gold watch and chain?"—Everybody's.

**Precisely**

A minister, while passing a group of convicts at work on the county roads, became very much depressed at the wickedness of the world.

"My good men," he exhorted, "we should strive to mend our ways."

"Well, wot you think we're doing," asked No. 3289, "digging fishworms?"—Carolina Buccaneer.

**If You Get What He Means**

"Pa, what's a scintilla?"

"A scintilla? Why—er—a scintilla is something there isn't anything of."—Boston Transcript.

**Sizing Him Up**

Hostess (who is endeavoring to fill a gap in the entertainment): "Mr. Madder, I'm sure you'll help us out with a song."

Indifferently Groomed Bohemian: "Sorry, but I'm afraid my vocal efforts are confined to singing in my bath."

Hostess: "Oh, do sing; and I'll warn them that you're rather out of practice."—The Humorist (London).

**A Slight Precaution**

Son: "Can you sign your name with your eyes shut, daddy?"

Father: "Certainly!"

Son: "Well, shut your eyes and sign my school report."—People's Journal.

**Time Enough**

"I don't intend to be married until I am thirty!"

"I don't intend to be thirty until I am married!"

—London Mail.

**Deadlier Than the Male**

"Now, can any one tell me what a myth is?" asked the teacher.

A solitary hand was raised, and a voice exclaimed:

"Please, miss, it's a female moth."—The Christian Advocate.

**Concert Manners**

Some one has just recently revealed the fact that music is much more enjoyable if "you listen to it with your eyes shut." It is also more enjoyable if the people sitting near you listen to it with their mouths shut.—The Tamaqua (Pa.) Evening Courier.

**A Timely Suggestion**

The tightest man in the world is the Scotchman who shot off a pistol outside his house on Christmas Eve and then came in and told the children that Santa Claus had committed suicide.—California Pelican.

**Te-he-he!**

"I'm surprised at your tailor turning you out like that."

"It's not his fault. He can never get the right measurements—I'm so ticklish!"—The Passing Show (London).

**Cramped Her Style**

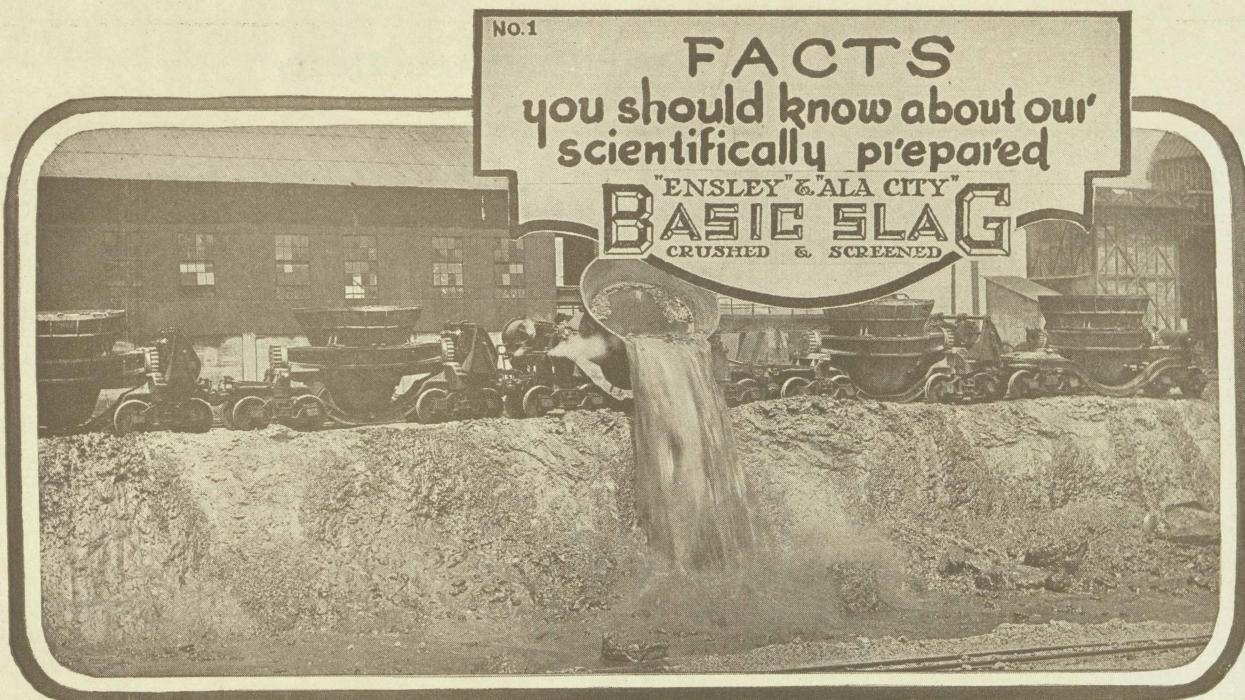
Mrs. Noise: "Why did you leave your last place?"

Cook: "They was trying to live within their income."—Life.

Refining consists in taking \$8 worth of crude oil and changing it at a cost of \$2.13 into products worth \$132.85.—Duluth Herald.

Walking isn't such a lost art. One must, by some such means, get out to the garage.—New Haven Register.

There were just as many careless drivers in the old days, but you see, the horses had sense.—Hartford Times.



## Pouring pure molten SLAG in modified pits increases its Angularity, Toughness and Strength

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**BASIC SLAG**  
CRUSHED & SCREENED

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The five modified pits are dry canals about 15 feet deep and several thousand feet long. Photo shows our two big electric shovels excavating the slag from the pits and loading onto dump cars drawn by electric locomotives over a third-rail system to the crushing plant.

## Status of Road Construction

THROUGH FEBRUARY 28, 1926

| Project<br>No.                      | Contractor.                | Road |                   | Total        |                | Base Miles | Surface Miles | Per Cent Type Complete |
|-------------------------------------|----------------------------|------|-------------------|--------------|----------------|------------|---------------|------------------------|
|                                     |                            | No.  | County            | Length Miles | Clearing Miles |            |               |                        |
| 19                                  | Duval Engr. & Contr. Co.   | 2    | Hamilton          | 8.20         |                | 3.92       | 0.00          | S.T. 42.00             |
| 37-D                                | Fla. Drainage & Const. Co. | 2    | Alachua           | 2.14         | 2.14           | 2.09       |               | G. 98.00               |
| 40-A                                | C. F. Lytle                | 4    | Brevard           | 16.17        | 16.17          | 15.45      | 13.91         | 0.00 S.T. 89.00        |
| 41                                  | Morgan-Hill Paving Co.     | 4    | Dade              | 12.00        | 7.87           | .47        | 0.00          | S.A. 2.00              |
| 46                                  | B. Booth & Co.             | 3    | Nassau            | 11.52        | 11.52          | 11.52      |               | G. 97.00               |
| 47                                  | Boone & Wester             | 4    | St. Johns         | 14.96        | 12.72          | 6.73       |               | G. 57.00               |
| 48                                  | A. J. Hoffman              | 4    | St. Johns         | 15.39        | 3.08           | .92        |               | G. 7.00                |
| 49                                  | A. J. Hoffman              | 4    | Flagler           | 13.81        | 0.00           | 0.00       |               | G. 0.00                |
| 50-B                                | B. Booth & Co.             | 14   | Putnam            | 9.77         | 3.52           | .98        |               | G. 14.40               |
| 51                                  | Noonan-Lawrence            | 7    | Escambia          | 6.28         | 1.61           | 1.25       | 0.00          | G. 6.50                |
| 514                                 | State Forces               | 1    | Jackson           | 11.04        | 0.00           | 0.00       | 0.00          | S.C. 10.50             |
| 562-A                               | H. E. Wolfe                | 8    | Highlands         | 5.37         |                |            | 0.00          | 0.00 S.T. 0.00         |
| 567                                 | State Forces               | 1    | Walton            | 21.35        | 21.35          | 19.21      |               | 18.57 S.C. 89.10       |
| 581                                 | Barnes & Smith             | 5    | Hillsborough      | 12.10        | 10.50          | 10.65      | 6.65          | 0.00 S.T. 72.00        |
| 586                                 | Gillis Const. Co.          | 1    | Jackson-Wash.     | 17.37        | 17.02          | 17.00      |               | 12.16 S.C. 93.00       |
| 595                                 | Strickland & Travis        | 3    | Volusia           | 7.43         | 7.43           | 3.86       |               | G. 54.80               |
| 597                                 | J. Y. Wilson               | 4    | Volusia           | 16.29        | 16.29          | 16.00      | 15.90         | 0.00 S.T. 96.00        |
| 607-B                               | Whitney Const. Co.         | 13   | Clay              | 6.76         | 6.76           | 6.76       | 5.50          | 0.00 S.T. 85.00        |
| 613                                 | Broadbent Const. Co.       | 5    | Sarasota          | 4.62         | 4.62           | 4.53       | .23           | 0.00 S.A. 22.00        |
| 614                                 | State Forces               | 5    | Sarasota          | 17.07        | 3.75           | 1.30       |               | G. 1.36                |
| 617                                 | Taylor & Cox               | 5    | Alachua           | 5.17         | 5.17           | 5.17       |               | G. 100.00              |
| 618                                 | J. R. & J. B. Miller       | 5    | Alachua           | 10.89        | 10.56          | 9.47       |               | G. 73.20               |
| 621                                 | Penton-Mathis Const. Co.   | 1    | Okaloosa          | 17.35        | 8.67           | 3.47       |               | G. 18.82               |
| 623                                 | State Forces               | 35   | Madison           | 12.91        | 8.99           | 9.16       |               | 0.00 S.C. 56.00        |
| 627                                 | L. M. Gray                 | 2    | Putnam            | 6.27         | 6.27           | 6.27       | 0.00          | S.T. 36.00             |
| 628                                 | L. M. Gray                 | 3    | Volusia           | 9.92         | 9.92           | 9.92       | 8.93          | 0.00 S.T. 91.90        |
| 630                                 | Meyer Const. Co.           | 8    | Highlands         | 11.00        |                |            | 11.00         | 10.12 S.T. 97.00       |
| 631                                 | E. P. Toulmin              | 1    | Washington-Holmes | 8.53         | 6.82           | 1.27       |               | G. 19.10               |
| 623                                 | Taylor Contracting Co.     | 1    | Gadsden           | 9.67         | 9.61           | 9.00       |               | 0.00 S.C. 90.00        |
| 634                                 | State Forces               | 1    | Jackson           | 11.07        | 10.07          | 8.86       |               | 6.64 S.C. 71.70        |
| 636                                 | C. F. Lytle                | 8    | St. Lucie         | 12.20        |                |            | 12.80         | 8.32 S.T. 98.00        |
| 637                                 | State Forces               | 10   | Leon              | 18.08        | 18.08          | 16.81      |               | 14.46 S.C. 85.00       |
| 639                                 | Taylor Contracting Co.     | 1    | Gadsden           | 9.84         | 9.84           | 9.84       |               | 9.84 S.C. 100.00       |
| 641                                 | Chas. F. Wilmore           | 4    | Palm Beach        | 11.36        | 0.00           | 0.00       |               | G. 0.00                |
| 642                                 | B. Booth & Co.             | 3    | Putnam            | 10.82        | 10.38          | 10.28      |               | G. 83.00               |
| 644-A                               | Gillis Const. Co.          | 10   | Wakulla           | 8.49         | 0.00           | 0.00       |               | G. 0.00                |
| 647                                 | H. E. Wolfe                | 8    | Highlands         | 7.00         | 7.00           | 7.00       | 5.16          | 0.00 S.T. 72.00        |
| 648                                 | Federal Contr. Co.         | 2    | Hardee            | 14.17        | 5.67           | 3.44       |               | G. 26.00               |
| 649                                 | Penton-Mathis Const. Co.   | 33   | Okaloosa          | 10.42        | 9.37           | 8.33       |               | 1.56 S.C. 60.00        |
| 651                                 | State Forces               | 10   | Gulf              | 14.72        | 9.56           | 7.06       |               | 0.00 S.C. 25.10        |
| 652                                 | Penton-Mathis Const. Co.   | 33   | Okaloosa          | 9.04         | 9.04           | 8.00       |               | .65 S.C. 60.00         |
| 655                                 | H. E. Wolfe                | 18   | Highlands         | 13.26        | 13.26          | 11.40      | 0.00          | 0.00 S.T. 25.00        |
| 657                                 | State Forces               | 6    | Jackson           | 10.00        | 4.00           | 3.30       |               | 1.00 S.C. 21.00        |
| 658                                 | Myers Const. Co.           | 1    | Holmes            | 8.21         | 4.93           | 2.79       |               | G. 31.90               |
| 660                                 | B. Booth & Co.             | 3    | Clay              | 10.52        | 4.63           | 1.47       |               | G. 18.00               |
| 661                                 | Sou. Paving & Const. Co.   | 2    | Lake              | 3.52         | 3.17           | 3.17       | 2.50          | 0.00 S.A. 41.80        |
| 663                                 | Taylor Contr. Co.          | 5    | Citrus            | 8.03         | 6.58           | 1.60       |               | G. 22.20               |
| 666                                 | State Forces               | 6    | Jackson           | 6.52         | 5.12           | 3.91       |               | 3.00 S.A. 60.00        |
| 669-B                               | M. C. Winterburn, Inc.     | 27   | Dade              | 10.32        | 6.00           | 5.50       | 0.00          | 0.00 S.T. 31.00        |
| 670                                 | State Forces               | 6    | Jackson           | 12.30        | 6.64           | 6.64       |               | 3.50 S.C. 37.00        |
| 672                                 | State Forces               | 1    | Leon              | 9.92         | 9.42           | 4.46       |               | 0.00 S.C. 44.00        |
| 673                                 | State Forces               | 1    | Gadsden           | 9.90         | 4.00           | 3.00       |               | 0.00 S.C. 23.00        |
| 679                                 | Taylor Contr. Co.          | 5    | Hernando          | 7.11         | .71            | .71        |               | G. 4.93                |
| 682                                 | Caye-Andrews Co. Inc.      | 5    | Citrus            | 6.45         | 5.81           | .77        |               | G. 20.00               |
| 689                                 | J. W. Hall                 | 5-A  | Alachua           | 1.67         | 0.00           | 0.00       |               | G. 0.00                |
| Total complete February 28th, 1926. |                            |      |                   | 1399.69      | 1344.23        | 573.15     | 1050.96       |                        |
| Complete month of February, 1926.   |                            |      |                   | 63.60        | 45.01          | 9.15       | 21.54         |                        |
| Total complete January 31st, 1926.  |                            |      |                   | 1336.09      | 1299.22        | 564.00     | 1029.42       |                        |

### TOTAL MILES COMPLETE

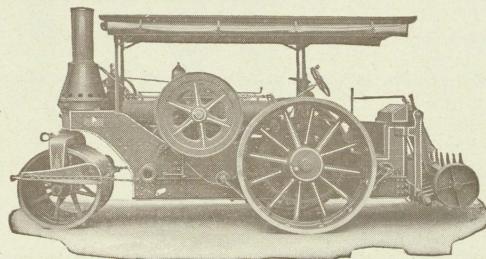
|                                | Concrete | Brick | B.C.  | S.A.  | B.M.  | Asp.  | Blk.   | S.T.   | S.C.  | Marl     | Total |
|--------------------------------|----------|-------|-------|-------|-------|-------|--------|--------|-------|----------|-------|
| Complete January 31, 1926..... | 107.16   | 17.15 | 10.74 | 55.67 | 89.07 | 23.20 | 407.08 | 399.28 | 45.86 | 1,155.21 |       |
| February, 1926 .....           | .27      |       |       | .65   |       |       |        | 6.17   | 17.83 |          | 24.91 |
| Total to date.....             | 107.43   | 17.15 | 10.74 | 56.31 | 89.07 | 23.20 | 413.25 | 417.11 | 45.86 | 1,180.12 |       |

Note—The above tabulation shows only those projects that are actually under construction at the present time and does not show projects that have been previously completed. However, the table, "Total miles completed," at the foot includes all projects that have been completed prior to February 28, 1926, and the amounts completed in February also. The abbreviations used are as follows:

C.—Concrete. S.A.—Sheet asphalt. B.M.—Bituminous macadam. R.—Rock base. S.C.—Sand clay. G. & D.—Graded and drained. S.T.—Surface treated. B. C.—Bituminous concrete.

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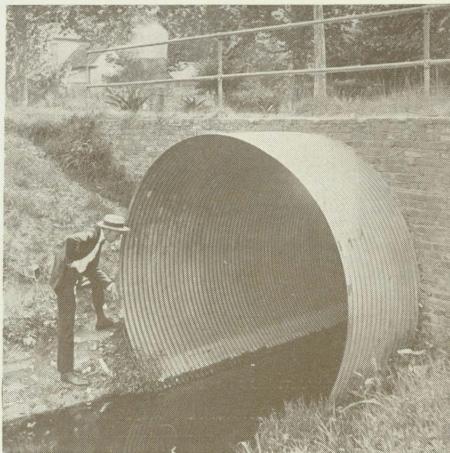
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Above: Culvert at Waycross, installed 1910.  
Below: Culvert recently installed under new road at Waycross  
farther up on same creek.



At Waycross, Georgia, just across the line from Florida, the old Armeo Culvert, 9 feet in diameter, shown above at the left, was installed in 1910. Today it is still in perfect condition. In fact, it has lasted so well that when just recently a new road was built farther up on the same creek, an Armeo Culvert was used there also. Armeo installations are permanent!

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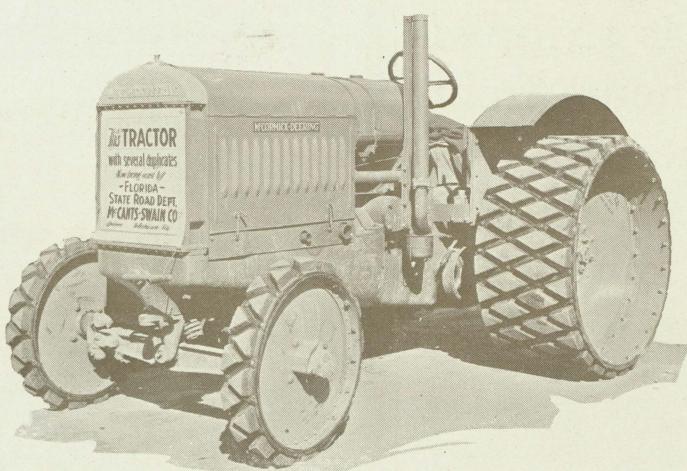
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